OBSERVATIONS & RECOMMENDATIONS

After reviewing data collected from **BIG PEA PORRIDGE POND AND MIDDLE PEA PORRIDGE POND, MADISON,** the program coordinators have made the following observations and recommendations:

Thank you for your continued hard work sampling the ponds this season! Your monitoring group sampled three times this season and has done so for many years! As you know, multiple sampling events each season enable DES to more accurately detect water quality changes. Keep up the good work!

We encourage your monitoring group to formally participate in the DES Weed Watchers program, a volunteer program dedicated to monitoring lakes and ponds for the presence of exotic aquatic plants. This program only involves a small amount of time during the summer months. Volunteers survey their waterbody once a month from **June** through **September**. To survey, volunteers slowly boat, or even snorkel, around the perimeter of the waterbody and any islands it may contain. Using the materials provided in the Weed Watchers Kit, volunteers look for any species that are of suspicion. After a trip or two around the waterbody, volunteers will have a good knowledge of its plant community and will immediately notice even the most subtle changes. If a suspicious plant is found, the volunteers will send a specimen to DES for identification. If the plant specimen is an exotic, a biologist will visit the site to determine the extent of the problem and to formulate a management plan to control the nuisance infestation. Remember that early detection is the key to controlling the spread of exotic plants.

If you would like to help protect your lake or pond from exotic plant infestations, contact Amy Smagula, Exotic Species Program Coordinator, at 271-2248 or visit the Weed Watchers web page at www.des.state.nh.us/ wmb/exoticspecies/survey.htm.

FIGURE INTERPRETATION

- **Figure 1 and Table 1:** Figure 1 (Appendix A) shows the historical and current year chlorophyll-a concentration in the water column. Table 1 (Appendix B) lists the maximum, minimum, and mean concentration for each sampling season that each pond has been monitored through VLAP.

  Chlorophyll-a, a pigment found in plants, is an indicator of the algal abundance. Because algae are usually microscopic plants that contain chlorophyll-a, and are naturally found in lake ecosystems, the chlorophyll-a concentration measured in the water gives an estimation of the algal concentration or lake productivity. **The median summer chlorophyll-a concentration for New Hampshire's lakes and ponds is 4.58 mg/m^3.**

  Big Pea Porridge Pond
  The current year data (the top graph) show that the chlorophyll-a concentration ***increased slightly*** from **June** to **July**, and then ***increased*** from **July** to **August**.

  The historical data (the bottom graph) show that the 2005 chlorophyll-a mean is ***much less than*** the state median and the similar lake median (for more information on the similar lake median, refer to Appendix F).

  Overall, the statistical analysis of the historical data (the bottom graph) shows that the mean annual chlorophyll-a concentration has ***not significantly changed*** since monitoring began. Specifically, the chlorophyll-a concentration has ***fluctuated between approximately 1.5 and 3.1 mg/m^3,*** and has ***not continually increased or decreased*** since **1995**. (Note: Please refer to Appendix E for the detailed statistical analysis explanation and data print out.)

  Middle Pea Porridge Pond
  The current year data (the top graph) show that the chlorophyll-a concentration ***decreased*** from **June** to **July**, and then ***increased slightly*** from **July** to **August**.

  The historical data (the bottom graph) show that the 2005 chlorophyll-a mean is ***much less than*** the state median and the similar lake median (for more information on the similar lake median, refer to Appendix F).

  Overall, the statistical analysis of the historical data (the bottom graph) shows that the mean annual chlorophyll-a concentration has ***not significantly changed*** since monitoring began. Specifically, the chlorophyll-a concentration has ***fluctuated between approximately 1.4 and 4.3 mg/m³,*** has ***not continually increased or decreased*** since **1995**. (Note: Please refer to Appendix E for the detailed statistical analysis explanation and data print out.)

While algae are naturally present in all ponds, an excessive or increasing amount of any type is not welcomed. In freshwater ponds, phosphorus is the nutrient that algae depend upon for growth. Algal concentrations may increase as nonpoint sources of phosphorus from the watershed increase, or as in-lake phosphorus sources increase (such as sediment phosphorus releases, known as internal loading). Therefore, it is extremely important for volunteer monitors to continually educate all watershed residents about activities within the watershed that affect phosphorus loading and pond quality.

- **Figure 2 and Table 3:** Figure 2 (Appendix A) shows the historical and current year data for pond transparency. Table 3 (Appendix B) lists the maximum, minimum and mean transparency data for each sampling season that each pond has been monitored through VLAP.

Volunteer monitors use the Secchi-disk, a 20 cm disk with alternating black and white quadrants, to measure water clarity (how far a person can see into the water). Transparency, a measure of water clarity, can be affected by the amount of algae and sediment from erosion, as well as the natural colors of the water. **The median summer transparency for New Hampshire's lakes and ponds is 3.2 meters.**

Big Pea Porridge Pond

The current year data (the top graph) show that the in-lake transparency ***increased slightly*** from **June** to **July**, and then ***increased*** from **July** to **August**.

The historical data (the bottom graph) show that the 2005 mean transparency is ***greater than*** the state median and was ***slightly less than*** the similar lake median (refer to Appendix F for more information about the similar lake median).

Overall, the statistical analysis of the historical data shows that the transparency has ***significantly decreased*** since monitoring began. Specifically, the in-lake transparency has ***decreased*** (meaning ***worsened***) on average by ***approximately 3.9 %*** per sampling season during the sampling period **1995** to **2005**. (Note: Please refer to Appendix E for the statistical analysis explanation and data print out.)

Middle Pea Porridge Pond
The current year data (the top graph) show that the in-lake transparency ***increased*** from **June** to **July**, and then ***increased slightly*** from **July** to **August**.

The historical data (the bottom graph) show that the 2005 mean transparency is ***greater than*** the state median and was ***slightly less than*** the similar lake median (refer to Appendix F for more information about the similar lake median).

Overall, the statistical analysis of the historical data (the bottom graph) shows that the mean annual in-lake transparency has ***not significantly changed*** (either *continually increased* or *decreased*) since monitoring began. Specifically, the in-lake transparency has ***fluctuated, ranging between approximately 3.7 and 5.5 meters,*** since **1995**. (Note: Please refer to Appendix E for the statistical analysis explanation and data print out.) It is important to point out that visual inspection of the historic trend line indicates a ***decreasing, meaning worsening,*** transparency trend. If the transparency continues to decrease during future sampling seasons, the worsening trend will become statistically significant.

Typically, high intensity rainfall causes sediment erosion to flow into ponds and streams, thus increasing turbidity and decreasing clarity. Efforts should continually be made to stabilize stream banks, pond shorelines, disturbed soils within the watershed, and especially dirt roads located immediately adjacent to the edge of tributaries and the pond. Guides to Best Management Practices designed to reduce, and possibly even eliminate, nonpoint source pollutants, such as sediment loading, are available from DES upon request.

- **Figure 3 and Table 8:** The graphs in Figure 3 (Appendix A) show the amount of epilimnetic (upper layer) phosphorus and hypolimnetic (lower layer) phosphorus; the inset graphs show current year data. Table 8 (Appendix B) lists the annual maximum, minimum, and median concentration for each deep spot layer and each tributary since each pond has joined VLAP.

  Phosphorus is the limiting nutrient for plant and algae growth in New Hampshire's freshwater lakes and ponds. Excessive phosphorus in a pond can lead to increased plant and algal growth over time. **The median summer total phosphorus concentration in the epilimnion (upper layer) of New Hampshire's lakes and ponds is 12 ug/L. The median summer phosphorus concentration in the hypolimnion (lower layer) is 14 ug/L.**

Big Pea Porridge Pond

The current year data for the epilimnion (the top inset graph) show that the phosphorus concentration ***decreased gradually*** from **June** to **August.**

The historical data show that the 2005 mean epilimnetic phosphorus concentration is ***less than*** the state median and is ***approximately equal to*** the similar lake median (refer to Appendix F for more information about the similar lake median).

The current year data for the hypolimnion (the bottom inset graph) show that the phosphorus concentration ***decreased*** from **June** to **July**, and then ***increased slightly*** from **July** to **August**.

The historical data show that the 2005 mean hypolimnetic phosphorus concentration is ***less than*** the state median and the similar lake median (refer to Appendix F for more information about the similar lake median).

Overall, the statistical analysis of the historical data shows that the phosphorus concentration in the epilimnion (upper layer) and the hypolimnion (lower layer) has ***not significantly changed*** since monitoring began. Specifically, the epilimnetic phosphorus concentration has ***fluctuated between approximately 4.5 and 9.3 ug/L*** and the hypolimnetic phosphorus concentration has ***fluctuated between approximately 6.0 and 18.5 ug/L*** since **1995**. (Note: Please refer to Appendix E for the detailed statistical analysis explanation and data print out.)

Middle Pea Porridge Pond

The current year data for the epilimnion (the top inset graph) show that the phosphorus concentration ***decreased*** from **June** to **July**, and then ***decreased slightly*** from **July** to **August**.

The historical data show that the 2005 mean epilimnetic phosphorus concentration is ***less than*** the state median and is ***approximately equal to*** the similar lake median (refer to Appendix F for more information about the similar lake median).

The current year data for the hypolimnion (the bottom inset graph) show that the phosphorus concentration ***decreased*** from **June** to **July**, and then ***decreased slightly*** from **July** to **August**.

The turbidity of the hypolimnion (lower layer) sample was ***elevated*** on the **July** sampling event (**2.12 NTUs**). This suggests that the pond bottom may have been disturbed by the anchor or by the Kemmerer Bottle while sampling and/or that the pond bottom is covered by a thick organic layer of sediment which is easily disturbed. When the pond bottom is disturbed, sediment, which typically contains attached phosphorus, is released into the water column. When collecting the hypolimnion sample, make sure that there is no sediment in the Kemmerer Bottle before filling the sample bottles.

The historical data show that the 2005 mean hypolimnetic phosphorus concentration is ***less than*** the state median and the similar lake median (refer to Appendix F for more information about the similar lake median).

Overall, the statistical analysis of the historical data shows that the phosphorus concentration in the epilimnion (upper layer) and the hypolimnion (lower layer) has ***not significantly changed*** since monitoring began. Specifically, the epilimnetic phosphorus concentration has ***fluctuated between approximately 3 and 9.3 ug/L*** and the hypolimnetic phosphorus concentration has ***fluctuated between approximately 7.3 and 15.5 ug/L*** since **1995**. (Note: Please refer to Appendix E for the detailed statistical analysis explanation and data print out.)

One of the most important approaches to reducing phosphorus loading to a waterbody is to continually educate watershed residents about its sources and how excessive amounts can adversely impact the ecology and the recreational, economical, and ecological value of lakes and ponds. Phosphorus sources within a pond's watershed typically include septic systems, animal waste, lawn fertilizer, road and construction erosion, and natural wetlands.

TABLE INTERPRETATION

- **Table 2: Phytoplankton**

  Table 2 (Appendix B) lists the current and historical phytoplankton species observed in each pond. Specifically, this table lists the three most dominant phytoplankton species observed in the sample and their relative abundance in the sample.

  The dominant phytoplankton species observed in the **July** sample collected at the **Big Pea Porridge Pond** deep spot were ***Chrysosphaerella*** **(golden-brown),** ***Mallomonas*** **(golden-brown),** and ***Anabaena*** **(cyanobacteria).**

  The dominant phytoplankton species observed in the **July** sample collected at the **Middle Pea Porridge Pond** deep spot were ***Dinobryon*** **(golden-brown),** ***Asterionella*** **(diatom),** and ***Rhizosolenia*** **(diatom).**

Phytoplankton populations undergo a natural succession during the growing season (Please refer to the "Biological Monitoring Parameters" section of this report for a more detailed explanation regarding seasonal plankton succession). Diatoms and golden-brown algae are typical in New Hampshire's less productive lakes and ponds.

- **Table 2: Cyanobacteria**

In addition to the cyanobacteria ***Anabaena*** being the **third-most** dominant species in the **July** phytoplankton sample collected at the **Big Pea Porridge Pond** deep spot, a small amount of ***Anabaena*** was observed in the **July** phytoplankton sample collected at the **Middle Pea Porridge Pond** deep spot. ***This species, if present in large amounts, can be toxic to livestock, wildlife, pets, and humans.*** (Please refer to the "Biological Monitoring Parameters" section of this report for a more detailed explanation regarding cyanobacteria).

Cyanobacteria can reach nuisance levels when phosphorus loading from the watershed to surface waters is increased (this is often caused by rain events) and favorable environmental conditions occur (such as a period of sunny, warm weather).

The presence of cyanobacteria serves as a reminder of both pond's delicate balance. Watershed residents should continue to act proactively to reduce nutrient loading to the pond by eliminating fertilizer use on lawns, keeping the pond shoreline natural, re-vegetating cleared areas within the watershed, and properly maintaining septic systems and roads.

In addition, residents should also observe the ponds in September and October during the time of fall turnover (lake mixing) to document any algal blooms that may occur. Cyanobacteria have the ability to regulate their depth in the water column by producing or releasing gas from vesicles. However, occasionally lake mixing can affect their buoyancy and cause them to rise to the surface and bloom. Wind and currents tend to "pile" cyanobacteria into scums that accumulate in one section of the pond. If a fall bloom occurs, please collect a sample (any clean jar or bottle will be suitable) and contact the VLAP Coordinator.

- **Table 4: pH**

Table 4 (Appendix B) presents the in-lake and tributary current year and historical pH data.

pH is measured on a logarithmic scale of 0 (acidic) to 14 (basic). pH is important to the survival and reproduction of fish and other aquatic life. A pH below 6.0 limits the growth and reproduction of fish. A pH between 6.0 and 7.0 is ideal for fish. The median pH value for the epilimnion (upper layer) in New Hampshire's lakes and ponds is **6.6**, which indicates that the surface waters in the state are slightly acidic. For a more detailed explanation regarding pH, please refer to the "Chemical Monitoring Parameters" section of this report.

The mean pH at the deep spot this season ranged from **5.92** in the hypolimnion to **6.48** in the epilimnion of **Big Pea Porridge Pond** and ranged from **6.30** in the hypolimnion to **6.50** in the epilimnion of **Middle Pea Porridge Pond**, which means that the water in both ponds is ***slightly acidic.***

It is important to point out that the pH in the hypolimnion (lower layer) was ***lower (more acidic)*** than in the epilimnion (upper layer). This increase in acidity near the pond bottom is likely due the decomposition of organic matter and the release of acidic by-products into the water column.

Due to the presence of granite bedrock in the state and acid deposition (from snowmelt, rainfall, and atmospheric particulates) in New Hampshire, there is not much that can be done to effectively increase pond pH.

- **Table 5: Acid Neutralizing Capacity**

Table 5 (Appendix B) presents the current year and historical epilimnetic ANC for each year the pond has been monitored through VLAP.

Buffering capacity (ANC) describes the ability of a solution to resist changes in pH by neutralizing the acidic input. The median ANC value for New Hampshire's lakes and ponds is **4.9 mg/L**, which indicates that many lakes and ponds in the state are at least "moderately vulnerable" to acidic inputs. For a more detailed explanation, please refer to the "Chemical Monitoring Parameters" section of this report.

The mean epilimnetic Acid Neutralizing Capacity (ANC) was **3.1 mg/L** in **Big Pea Porridge Pond** and **3.5 mg/L** in **Middle Pea Porridge Pond** this season, both of which are ***less than*** the state median. In addition, this indicates that both ponds are ***moderately vulnerable*** to acidic inputs (such as acid precipitation).

- **Table 6: Conductivity**

  Table 6 (Appendix B) presents the current and historical conductivity values for tributaries and in-lake data. Conductivity is the numerical expression of the ability of water to carry an electric current (which is determined by the number of negatively charged ions from metals, salts, and minerals in the water column). The median conductivity value for New Hampshire's lakes and ponds is **40.0 uMhos/cm**. For a more detailed explanation, please refer to the "Chemical Monitoring Parameters" section of this report.

  The mean annual epilimnetic conductivity in **Big Pea Porridge Pond** was **50.15 uMhos/cm** and the mean annual epilimnetic conductivity in **Middle Pea Porridge Pond** was **56.20 uMhos/cm,** both of which are ***greater than*** the state median.

  The conductivity has ***increased*** at the deep spot of **both ponds** (in and in the inlets since monitoring began. Typically, sources of increased conductivity are due to human activity. These activities include failed or marginally functioning septic systems, agricultural runoff, and road runoff (which contains road salt during the spring snow melt). New development in the watershed can alter runoff patterns and expose new soil and bedrock areas, which could contribute to increasing conductivity. In addition, natural sources, such as iron and manganese deposits in bedrock, can influence conductivity.

  Culvert and drainage channel sampling was conducted in the **Spring** of **2003**, **2004,** and **2005** soon after snow melt in the vicinity of the roadways. The results from these sampling events show elevated conductivity and chloride levels in a few locations. (Please refer to the discussion of Table 13 for more information regarding chloride results.) It is likely that de-icing materials applied to nearby roadways during the winter months may be influencing the conductivity in the ponds. In New Hampshire, the most commonly used de-icing material is salt (sodium chloride).

  A limited amount of chloride sampling was conducted this season. Please refer to the discussion of Table 13 for information regarding chloride results.

  We recommend that your monitoring group conduct a shoreline conductivity survey both ponds and the tributaries with ***elevated*** conductivity to help pinpoint the sources of conductivity.

  To learn how to conduct a shoreline or tributary conductivity survey, please refer to the 2004 "Special Topic Article" or contact the VLAP Coordinator.

- **Table 8: Total Phosphorus**
  Table 8 (Appendix B) presents the current year and historical total phosphorus data for in-lake and tributary stations. Phosphorus is the nutrient that limits the algae's ability to grow and reproduce. Please refer to the "Chemical Monitoring Parameters" section of this report for a more detailed explanation.

  The total phosphorus concentration was ***elevated*** (**25 ug/L**) in the **Big Rock Inlet** on the **June** and **July** sampling events. The turbidity of the **June** and **July** samples was also ***slightly elevated*** **(2.12 and 3.97 ug/L, respectively).** This station has had a history of ***elevated*** and ***fluctuating*** total phosphorus and turbidity levels. We recommend that your monitoring group conduct a stream survey and storm event sampling along this inlet so that we can determine what may be causing the elevated levels.

  The total phosphorus concentration was ***elevated*** (**26 ug/L**) in the **Muddy Beach Inlet** on the **August** sampling event. The turbidity of this sample was also ***slightly elevated*** **(3.67 ug/L),** which suggests that the stream bottom was disturbed while sampling and/or soil erosion is occurring in this area of the watershed. If you suspect that erosion is occurring in this portion of the watershed, we recommend that your monitoring group conduct a stream survey and storm event sampling along this inlet. This additional sampling may allow us to determine what is causing the ***elevated*** levels of turbidity and phosphorus.

  For a detailed explanation on how to conduct rain event sampling, please refer to the 2002 VLAP Annual Report "Special Topic Article" or contact the VLAP Coordinator.

- **Table 9 and Table 10: Dissolved Oxygen and Temperature Data**
  Table 9 (Appendix B) shows the dissolved oxygen/temperature profile(s) for the 2005 sampling season. Table 10 (Appendix B) shows the historical and current year dissolved oxygen concentration in the hypolimnion (lower layer). The presence of dissolved oxygen is vital to fish and amphibians in the water column and also to bottom-dwelling organisms. Please refer to the "Chemical Monitoring Parameters" section of this report for a more detailed explanation.

  The dissolved oxygen concentration was greater than **100%** saturation at **3 meters** at the **Big Pea Porridge Pond** and **Middle Pea Porridge Pond** deep spots on the **July** sampling event. Wave action from wind can also dissolve atmospheric oxygen into the upper layers of the water column. Layers of algae can also increase the dissolved oxygen in the water column, since oxygen is a by-product of photosynthesis.

The dissolved oxygen concentration was ***lower in the hypolimnion (lower layer) than in the epilimnion (upper layer)*** at the deep spot of both ponds on **July** sampling event. As ponds age, and as the summer progresses, oxygen typically becomes ***depleted*** in the hypolimnion by the process of decomposition. Specifically, the loss of oxygen in the hypolimnion results primarily from the process of biological breakdown of organic matter (i.e.; biological organisms use oxygen to break down organic matter), both in the water column and particularly at the bottom of the pond where the water meets the sediment. When oxygen levels are depleted to less than 1 mg/L in the hypolimnion (as it was in **Middle Pea Porridge Pond** on the **July** sampling event), the phosphorus that is normally bound up in the sediment may be re-released into the water column (a process referred to as ***internal phosphorus loading***).

- **Table 11: Turbidity**

Table 11 (Appendix B) lists the current year and historical data for in-lake and tributary turbidity. Turbidity in the water is caused by suspended matter, such as clay, silt, and algae. Water clarity is strongly influenced by turbidity. Please refer to the "Other Monitoring Parameters" section of this report for a more detailed explanation.

As discussed previously, the turbidity of the **Middle Pea Porridge Pond** hypolimnetic sample was ***elevated*** on the **July** sampling event (**2.12 NTUs**). This suggests that the pond bottom may have been disturbed by the anchor or by the Kemmerer Bottle while sampling and/or that the pond bottom is covered by a thick organic layer of sediment which is easily disturbed. When the pond bottom is disturbed, sediment, which typically contains attached phosphorus, is released into the water column. When collecting the hypolimnion sample, make sure that there is no sediment in the Kemmerer Bottle before filling the sample bottles.

Also discussed previously, the phosphorus concentration and turbidity level was ***elevated*** in the **Big Rock Inlet** on the **June** and **July** sampling events. In addition, the phosphorus concentration and turbidity level in the **Muddy Beach Inlet** was ***elevated*** on the **August** sampling event. When the phosphorus concentration and turbidity level in a tributary sample are both elevated, it suggests that soil erosion is occurring upstream. If you suspect that erosion is occurring in these areas of the watershed, we recommend that your monitoring group conduct a stream survey and storm event sampling along these tributaries to identify sources of phosphorus and turbidity.

- **Table 12: Bacteria (*E.coli*)**
  Table 12 lists the current year and historical data for bacteria *(E.coli*) testing. (Please note that Table 12 now lists the maximum and minimum results for this season and for all past sampling seasons.) *E. coli* is a normal bacterium found in the large intestine of humans and other warm-blooded animals. *E.coli* is used as an indicator organism because it is easily cultured and its presence in the water, in defined amounts, indicates that sewage **MAY** be present. If sewage is present in the water, potentially harmful disease-causing organisms **MAY** also be present.

  The *E. coli* concentration at **Geneva Beach** was ***elevated*** on the **July** sampling event. Specifically, the result of **greater than 400 counts per 100 mL *was greater than*** the state standard of 88 counts per 100 mL for designated public beaches. This station was re-sampled on the **August** sampling event and the result of ***less than 2 counts* per 100mL** was *much less than* the state standard for designated public beaches.

  If you are concerned about *E. coli* levels at this station, your monitoring group should conduct rain event sampling and bracket sampling in this area. This additional sampling may help us determine the source of the bacteria.

- **Table 13: Chloride**
  The chloride ion (Cl^-) is found naturally in some surfacewaters and groundwaters and in high concentrations in seawater. Research has shown that ***elevated*** chloride levels can be toxic to freshwater aquatic life. In order to protect freshwater aquatic life in New Hampshire, the state has adopted **acute and chronic** chloride criteria of **860 and 230 mg/L** respectively. The chloride content in New Hampshire lakes is naturally low, generally less than 2 mg/L in surface waters located in remote areas away from habitation. Higher values are generally associated with salted highways and, to a lesser extent, with septic inputs. Please refer to the "Chemical Monitoring Parameters" section of this report for a more detailed explanation.

  As discussed previously, chloride testing was conducted in **April** at many locations near roadway culverts and roadway drainage areas. The chloride results ranged from **less than 3 mg/L to 60 mg/L**, which is ***less than*** state acute and chronic chloride standards, but is ***higher than*** we would expect to measure in New Hampshire's lakes and ponds.

We recommend that your monitoring group continue to conduct chloride sampling in the epilimnion at the deep spot and in the inlet tributaries near salted-roadways, particularly in the spring soon after snow-melt and after rain events during the summer. This will establish a baseline of data that will assist your monitoring group and DES to determine lake quality trends in the future.

Please note that there will be an additional cost for each of the chloride samples and that these samples must be analyzed at the DES laboratory in Concord. In addition, it is best to conduct chloride sampling in the spring as the snow is melting and during rain events.

Furthermore, we recommend that the association also work with watershed residents to reduce the use of salt on private roads, driveways, and walkways. Watershed residents should be encouraged to implement a “low salt diet” for their property. For guidance, please read the 2005 DES Greenworks Article “Salt: An Emerging Issue for Water Quality” (January 2005) which can be accessed at www.des.nh.gov/gw0105.htm or from the VLAP Coordinator.

- **Table 14: Current Year Biological and Chemical Raw Data**
  This table lists the most current sampling season results. Since the maximum, minimum, and annual mean values for each parameter are not shown on this table, this table displays the current year “raw” (meaning unprocessed) data. The results are sorted by station, depth zone (epilimnion, metalimnion, and hypolimnion) and parameter.

- **Table 15: Station Table**
  As of the Spring of 2004, all historical and current year VLAP data are included in the DES Environmental Monitoring Database (EMD). To facilitate the transfer of VLAP data into the EMD, a new station identification system had to be developed. While volunteer monitoring groups can still use the sampling station names that they have used in the past (and are most familiar with), an EMD station name also exists for each VLAP sampling location. For each station sampled at each pond, Table 15 identifies what EMD station name corresponds to the station names you have used in the past and will continue to use in the future.

DATA QUALITY ASSURANCE AND CONTROL

Annual Assessment Audit:

During the annual visit to your ponds, the biologist conducted a "Sampling Procedures Assessment Audit" for your monitoring group. Specifically, the biologist observed the performance of your monitoring group while sampling and filled out an assessment audit sheet to document the ability of the volunteer monitors to follow the proper field sampling procedures (as outlined in the VLAP Monitor's Field Manual). This assessment is used to identify any aspects of sample collection in which volunteer monitors fail to follow proper procedures, and also provides an opportunity for the biologist to retrain the volunteer monitors as necessary. This will ultimately ensure that the samples that the volunteer monitors collect are truly representative of actual lake and tributary conditions.

Overall, your monitoring group did an ***excellent*** job collecting samples on the annual biologist visit this season! Specifically, the members of your monitoring group followed the proper field sampling procedures and there was no need for the biologist to provide additional training. Keep up the good work!

Sample Receipt Checklist:

Each time your monitoring group dropped off samples at the laboratory this summer, the laboratory staff completed a sample receipt checklist to assess and document if the volunteer monitors followed proper sampling techniques when collecting the samples. The purpose of the sample receipt checklist is to minimize, and hopefully eliminate, future re-occurrences of improper sampling techniques.

Overall, the sample receipt checklist showed that your monitoring group did a ***very good*** job when collecting samples this season! Specifically, the members of your monitoring group followed the majority of the proper field sampling procedures when collecting and submitting samples to the laboratory. However, the laboratory did identify one aspect of sample collection that the volunteer monitors could improve upon.

- **Sample holding time:** Please remember to return samples to the laboratory **within 24 hours of sample collection**. This will ensure that samples do not degrade before they are analyzed**. If you plan to sample on the weekend, please sample on Sunday afternoon and return samples to the lab first thing on Monday morning to ensure that samples can be analyzed within 24 hours**. Also, it is best if you collect *E.coli* samples on the **same day** that you plan on returning the samples to the laboratory. This will ensure that the laboratory staff will have adequate time to log in and process the samples **within** 24 hours of sample collection.

USEFUL RESOURCES

Acid Deposition Impacting New Hampshire's Ecosystems, NHDES Fact Sheet ARD-32, (603) 271-2975 or www.des.state.nh.us/factsheets/ard/ard-32.htm.

Best Management Practices to Control Nonpoint Source Pollution: A Guide for Citizens and Town Officials, NHDES Booklet WD-03-42, (603) 271-2975.

Best Management Practices for Well Drilling Operations, NHDES Fact Sheet WD-WSEB-21-4, (603) 271-2975 or www.des.nh.gov/factsheets/ws/ws-21-4.htm.

Biodegradable Soaps and Water Quality, NHDES Fact Sheet BB-54, (603) 271-2975 or www.des.state.nh.us/factsheets/bb/bb-54.htm.

Canada Geese Facts and Management Options, NHDES Fact Sheet BB-53, (603) 271-2975 or www.des.state.nh.us/factsheets/bb/bb-53.htm.

Cyanobacteria in New Hampshire Waters Potential Dangers of Blue-Green Algae Blooms, NHDES Fact Sheet WMB-10, (603) 271-2975 or www.des.state.nh.us/factsheets/wmb/wmb-10.htm.

Erosion Control for Construction in the Protected Shoreland Buffer Zone, NHDES Fact Sheet WD-SP-1, (603) 271-2975 or www.des.state.nh.us/factsheets/sp/sp-1.htm.

Freshwater Jellyfish In New Hampshire, NHDES Fact Sheet WD-BB-5, (603) 271-2975 or www.des.state.nh.us/factsheets/bb/bb-51/htm.

Impacts of Development Upon Stormwater Runoff, NHDES Fact Sheet WD-WQE-7, (603) 271-2975 or www.des.state.nh.us/factsheets/wqe/wqe-7.htm.

IPM: An Alternative to Pesticides, NHDES Fact Sheet WD-SP-3, (603) 271-2975 or www.des.state.nh.us/factsheets/sp/sp-3.htm.

Iron Bacteria in Surface Water, NHDES Fact Sheet WD-BB-18, (603) 271-2975 or www.des.state.nh.us/factsheets/bb/bb-18.htm.

Lake Foam, NHDES Fact Sheet WD-BB-4, (603) 271-2975 or www.des.state.nh.us/factsheets/bb/bb-5.htm.

Lake Protection Tips: Some Do's and Don'ts for Maintaining Healthy Lakes, NHDES Fact Sheet WD-BB-9, (603) 271-2975 or www.des.state.nh.us/factsheets/bb/bb-9.htm.

Low Impact Development Hydrologic Analysis. Manual prepared by Prince George's County, Maryland, Department of Environmental Resources. July 1999. To access this document, visit www.epa.gov/owow/nps/lid_hydr.pdf or call the EPA Water Resource Center at (202) 566-1736.

Low Impact Development: Taking Steps to Protect New Hampshire's Surface Waters NHDES Fact Sheet WD-WMB-16, (603) 271-2975 or www.des.state.nh.us/factsheets/wmb/wmb-17.htm.

Proper Lawn Care In the Protected Shoreland, The Comprehensive Shoreland Protection Act, NHDES Fact Sheet WD-SP-2, (603) 271-2975 or www.des.state.nh.us/factsheets/sp/sp-2.htm.

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